

August 28, 2003

MEMORANDUM TO: Kathy Halvey Gibson, Acting Chief  
Special Projects and Inspection Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

THROUGH: Brian Smith, Acting Chief /RA/  
Special Projects Section  
Special Projects and Inspection Branch  
Division of Fuel Cycle Safety  
and Safeguards, NMSS

FROM: Yawar H. Faraz, Senior Project Manager /RA/  
Special Projects Section  
Special Projects and Inspection Branch  
Division of Fuel Cycle Safety  
and Safeguards, NMSS

SUBJECT: SUMMARY OF JULY 28-31, 2003, LEAD CASCADE EXTERNAL EVENT  
SITE VISIT IN PIKETON, OHIO

From July 28 - 31, 2003, U.S. Nuclear Regulatory Commission (NRC) staff from the Division of Fuel Cycle Safety and Safeguards and the Office of Research, and staff from the Center of Nuclear Waste Regulatory Analysis (CNWRA), an NRC contractor, visited the Portsmouth Gaseous Diffusion Plant site to gather and review information to assess the impacts of external events on the Lead Cascade facility. I am attaching a trip report for your use. The trip report contains no proprietary or classified information.

cc: William Szymanski/DOE   Randall DeVault/DOE   Asadul Chowdhury, CNWRA  
James Curtiss/W&S   Dan Minter/SODI   Rod Krich/LES   Mario Robles/USEC

Docket No: 70-7003

Attachment: Trip Report

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Date	8/28/03	8/28/03	8/28/03

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## TRIP REPORT

Date: July 28-31, 2003

Place: Portsmouth Gaseous Diffusion Plant, Piketon, Ohio

Attendees: Y. Faraz, H. Graves, NRC; A. Chowdhury, S. Hsiung, J. Stamatakis, CNWRA

Purpose:

The purpose of this trip was for the U.S. Nuclear Regulatory Commission (NRC) staff and staff from the Center of Nuclear Waste Regulatory Analysis (CNWRA), an NRC contractor, to gather and review information to assess safety of the United States Enrichment Corporation's (USEC's) Lead Cascade facility from external events including earthquakes and high winds.

Discussion:

NRC staff from the Division of Fuel Cycle Safety and Safeguards and the Office of Research, and staff from the CNWRA visited the Portsmouth Gaseous Diffusion Plant site from July 28 to July 31, 2003. The NRC conducted an introduction meeting on July 28 at 8:30 AM in which it outlined the purpose, scope and objectives of the site visit. A list of attendees for the introduction meeting is contained in Attachment 1. Following the introduction meeting, USEC gave the NRC and CNWRA visitors an unclassified tour of the Department of Energy's existing Gas Centrifuge Enrichment Plant (GCEP) where USEC intends to house its Lead Cascade facility.

While onsite, the CNWRA team reviewed documents including GCEP plant drawings, design information, and seismic evaluations and geotechnical investigations for the area. The team requested copies of many of these documents. The requested documents are listed in Attachment 2. According to USEC, as of August 25, 2003, it was still searching for the fourth document in Attachment 2. The rest of the documents have been sent to CNWRA. The team also identified needed information (Attachment 3) that was not available during the site visit. Of this, most notable was the soil-structure interaction analysis for the GCEP building that will house the Lead Cascade. In addition to agreeing to provide the requested documents, USEC noted that it would attempt to locate or develop the needed information and provide it to CNWRA as soon as possible. According to USEC, in response to this request, as of August 25, 2003, USEC had either identified existing information, including the soil-structure interaction analysis, or developed new information. USEC intends to mail the requested information to CNWRA during the week of August 25, 2003.

The NRC concluded the site visit by conducting a closeout meeting on July 31, in which the NRC reiterated the purpose of the site visit and provided a synopsis of its activities during the week. A list of attendees for the closeout meeting is contained in Attachment 4.

Action Items for NRC:

None

Attachment

**ATTENDEE LIST FOR INTRODUCTION MEETING**

<b><u>Name</u></b>	<b><u>Organization</u></b>
Yawar Faraz	NRC
Peter Miner	USEC
Roy Holliday	USEC
Kelly Coriell	USEC
John Hortel	USEC
Greg Corzine	USEC
George Shoemaker	USEC
Gregg Peed	USEC
Emery Smith	USEC
Asadul Chowdhury	CNWRA
Simon Hsiung	CNWRA
John Stamatakis	CNWRA

## **REQUESTED DOCUMENTS**

1. DAC-2101-0001 "Process Building Seismic Evaluation (X-3001 Building)" July 25, 2003 with backup data supplied
2. ORO-EP-120 "Seismic Design Criteria for the Gas Centrifuge Enrichment Plant," December 1978
3. K-DA-603, Revision 2, "Gas Centrifuge Enrichment Plant General Design Criteria," April 1983
4. ERDAM - Chapter 0531, "Safety of Nonreactor Nuclear Facilities." U.S. Energy Research and Development Administration, November, 1976. (Note: This is reference No. 13 of ORO-EP-120, December 1978.)
5. ORO-EP-115 "Safety Criteria for Gas Centrifuge Isotope Enrichment Facilities," July 1978
6. UCRL-15910 "Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards," June 1990
7. PP-2601-0001, Revision 0, "USEC Centrifuge Program, Lead Cascade Project Assessment Report," February 28, 2003
8. Portsmouth Gaseous Diffusion Plant Site Map
9. Geotechnical Investigations, Volumes I, II, III, and IV. Gas Centrifuge Enrichment Plant, Portsmouth, Ohio. Law Engineering Testing Company, April 1978. (NOTE: As discussed, this set of references should be returned to USEC Inc. after use.)
10. ES/CNPE-95/2 "Seismic Hazard Criteria for the Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio U.S. Department of Energy Reservations," December 1995
11. 2-D Plot of Mode Shapes.
12. Full set of Structural Drawings.
13. Foundation Design Calculations for the X-3001 (FLU00029) that also includes soil-site information.
14. Design Calculations, Structural Steel, PB X-3001, FLUOR, packages DS 1.1 through DS 1.12; DS 1.22 through DS 1.34; DS 1.39 through DS 1.50; DS 3.6 through DS 3.8; DS 3.11; DS 3.18 through DS 3.26; and DC 4.15 through DS 4.28. Note concerning package DS 4.1 through DS 4.14, these calculations were voided and superceded by DS 4.15 through DS 4.28.
15. Table comparing new (STAAD III) and previous (SAP) seismic analysis.

16. Miscellaneous Paper GL-93-13, Site-Specific Earthquake Response Analysis for Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio, U.S. Army Corps of Engineers, Waterways Experiment Station, August 1993.
17. K/GDP/SAR/SUB-2/R1, Seismic Hazard Evaluation for the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio, Risk Engineering, Inc., September 1992.
18. K/GDP/SAR-15, Review of Earthquake Hazard Assessments of Plant Sites at Paducah, Kentucky, and Portsmouth, Ohio, U.S. Geological Survey, March 1992.
19. Foundation Design drawings for Firewater tank outside X-3001 Process Building (i.e., X-6643-1 and X-6644).
20. ORO-EP-110-1 and ORO-EP-110-2, Gas Centrifuge Enrichment Plant Master Specifications, Volumes I and II, February 1978.
21. Additional Drawings X-3001-950MP (Rev 0), X-3001-951MP (Rev 0), and X-3001-3312-ME (Rev 2).

### **REQUESTED INFORMATION**

1. Technical basis for 30,000yr tornado wind at 100 mph.
2. Technical basis for 100yr snow design basis (20psf) - exact reference (source) will be sufficient.
3. Source for structural criteria of 3/4" settlement per 20ft distance. [Vol. 2 of Geotechnical Site Investigation].
4. Soil-structure interaction analysis for X-3001 structure.
5. Eigen-values of 3D X-3001 structure.
6. Rationale for vertical PGA being 2/3 of the horizontal PGA.
7. Rationale for load combinations for Building X-3001 (provided during meeting - verbal).
8. A discussion on how meteorological temperature variations were included in the design of X-3001 structure (thermal rise due to machine operation).
9. Calculation on determining 1" differential settlement between columns of X-3001 structure.
10. Technical basis for design basis wind speed of 90 mph for the X-3001 structure. (extreme wind).
11. A tabulation of normal and extreme temperature measured at the site and wind records.

**ATTENDEE LIST FOR CLOSEOUT MEETING**

<b><u>Name</u></b>	<b><u>Organization</u></b>
Herman Graves	NRC
Asadul Chowdhury	CNWRA
Simon Hsiung	CNWRA
Kelly Coriell	USEC
George Shoemaker	USEC
John Hortel	USEC
Roy Holliday	USEC
Greg Corzine	USEC